Password Strength Analyzer & Custom Wordlist Generator

Abstract

This project demonstrates a practical cybersecurity tool developed in Python that analyzes password strength and creates custom wordlists from user-supplied data such as names, dates, or pet names. Using the zxcvbn library, the tool estimates password entropy, gives feedback on strength, and generates realistic password candidates through common transformations like leetspeak, case variations, and numeric suffixes. This helps illustrate how attackers form guesses and how to select stronger passwords.

Introduction

Weak passwords are one of the most exploited vulnerabilities in digital systems. Users often reuse predictable patterns, personal details, or common sequences, making them easy to crack. The Password Strength Analyzer and Custom Wordlist Generator tool was designed to evaluate password robustness and simulate potential attack wordlists based on user data. The analysis offers insight into password security and practical recommendations for improvement.

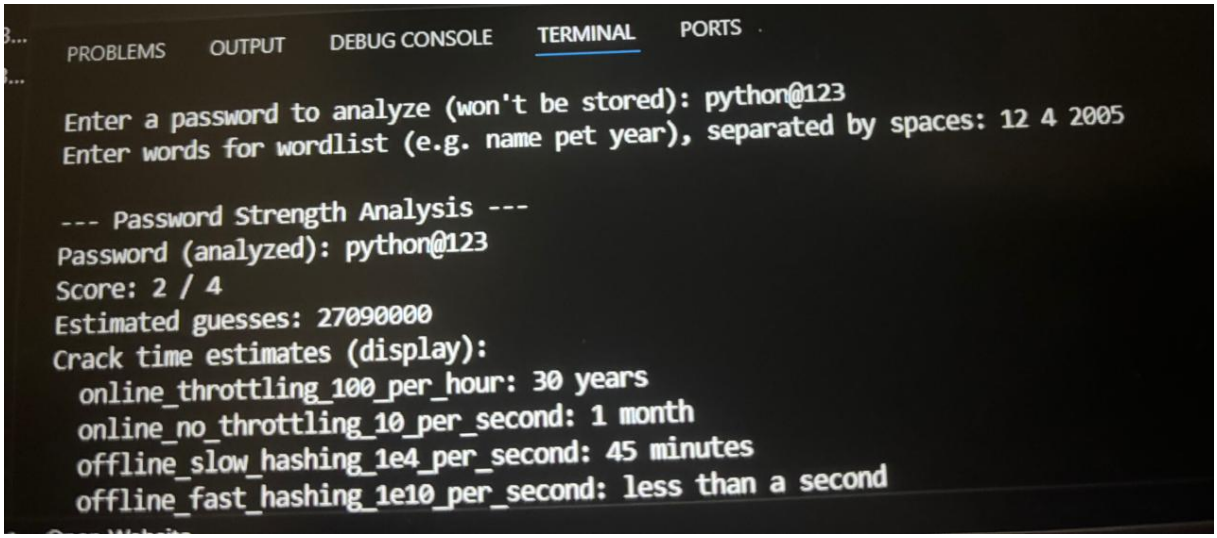
Tools Used

• Python 3.x – Core language for development
• zxcvbn – Library for estimating password strength and entropy
• itertools, os – For transformations and wordlist generation
• tkinter – Optional GUI interface for ease of use
• reportlab – Used to generate this PDF report

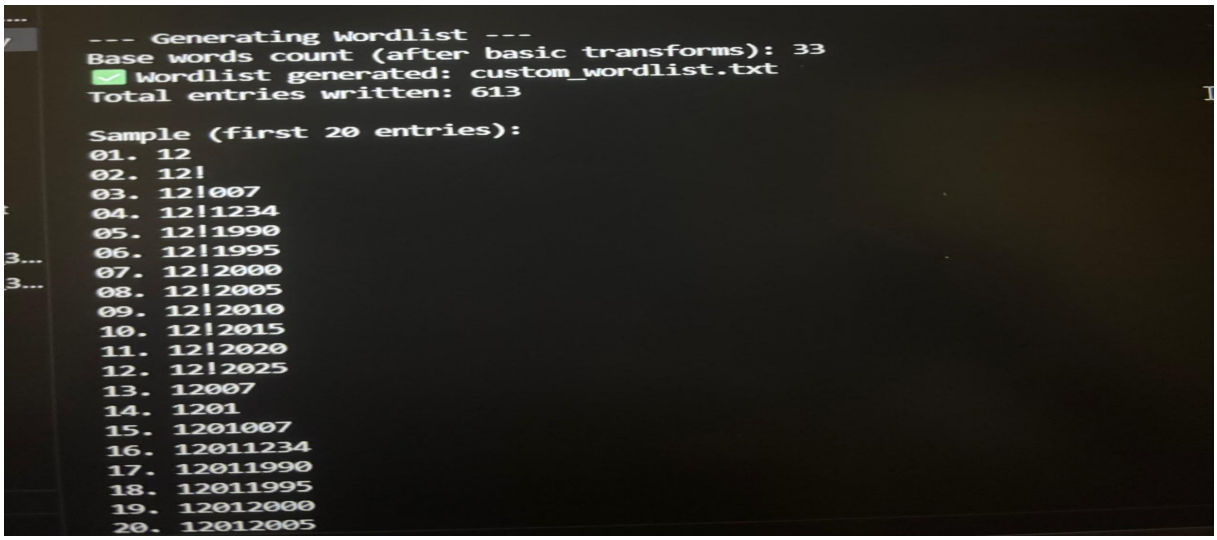
Steps Involved in Building the Project

1. Define project objectives: password analysis and secure wordlist creation.
2. Implement entropy calculations using zxcvbn to measure strength.
3. Accept user inputs like name, year, and pet to personalize the list.
4. Apply transformations such as leetspeak (a→@, o→0), capitalization, and year appends.
5. Export results to a .txt file (custom_wordlist.txt) for penetration testing tools.
6. Add user interface for accessibility, and produce visual feedback on password quality.

Password Strength Analysis (Sample Output)



Custom Wordlist Generation (Sample Output)



Conclusion

The Password Strength Analyzer with Custom Wordlist Generator is a powerful educational tool demonstrating how passwords can be tested and improved. It bridges the gap between user behavior and security practice by showing how small variations in passwords affect resistance to attacks. Future enhancements could include cloud integration, real-time feedback systems, and advanced pattern detection using machine learning techniques.

Generated Report | Password Strength Analyzer Project | Use responsibly for ethical cybersecurity testing.